

FIG. 1A
CONVENTIONAL
ART

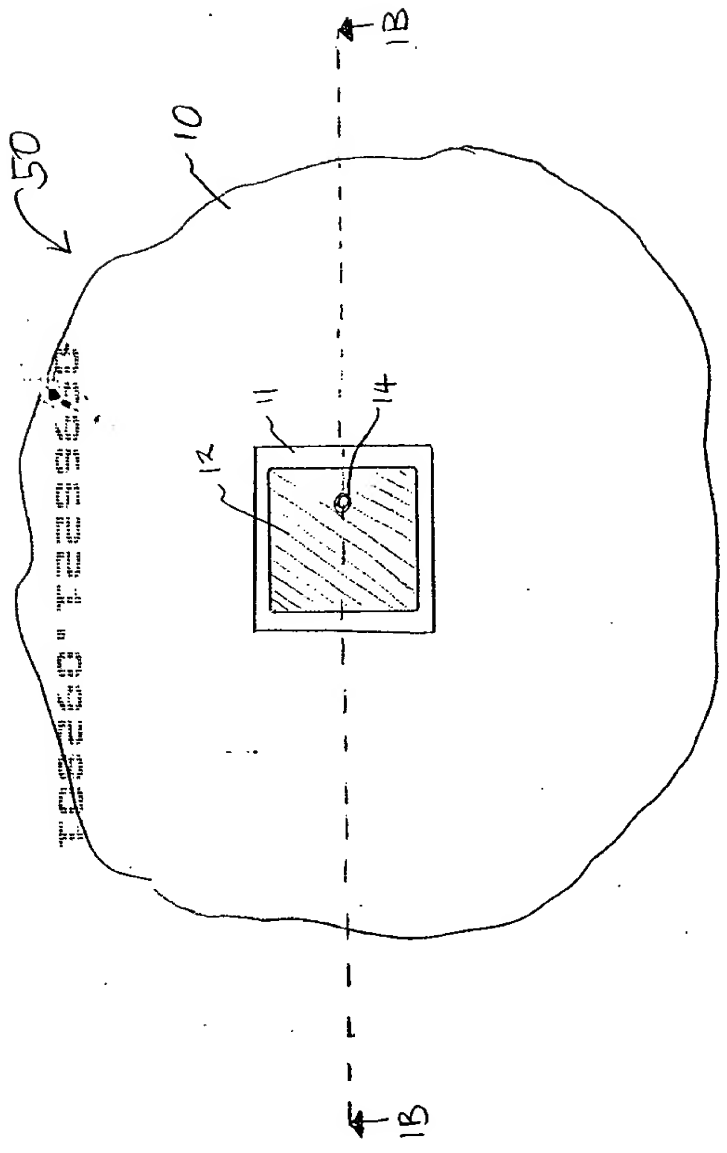
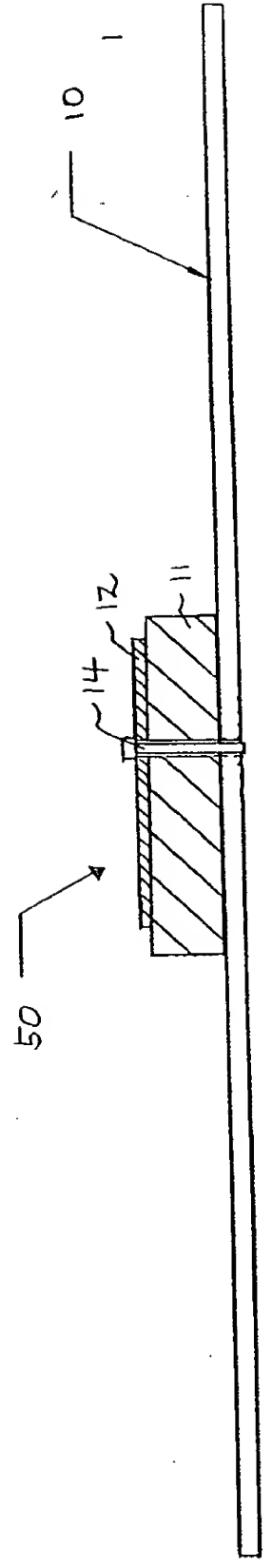


FIG. 1B
CONVENTIONAL
ART



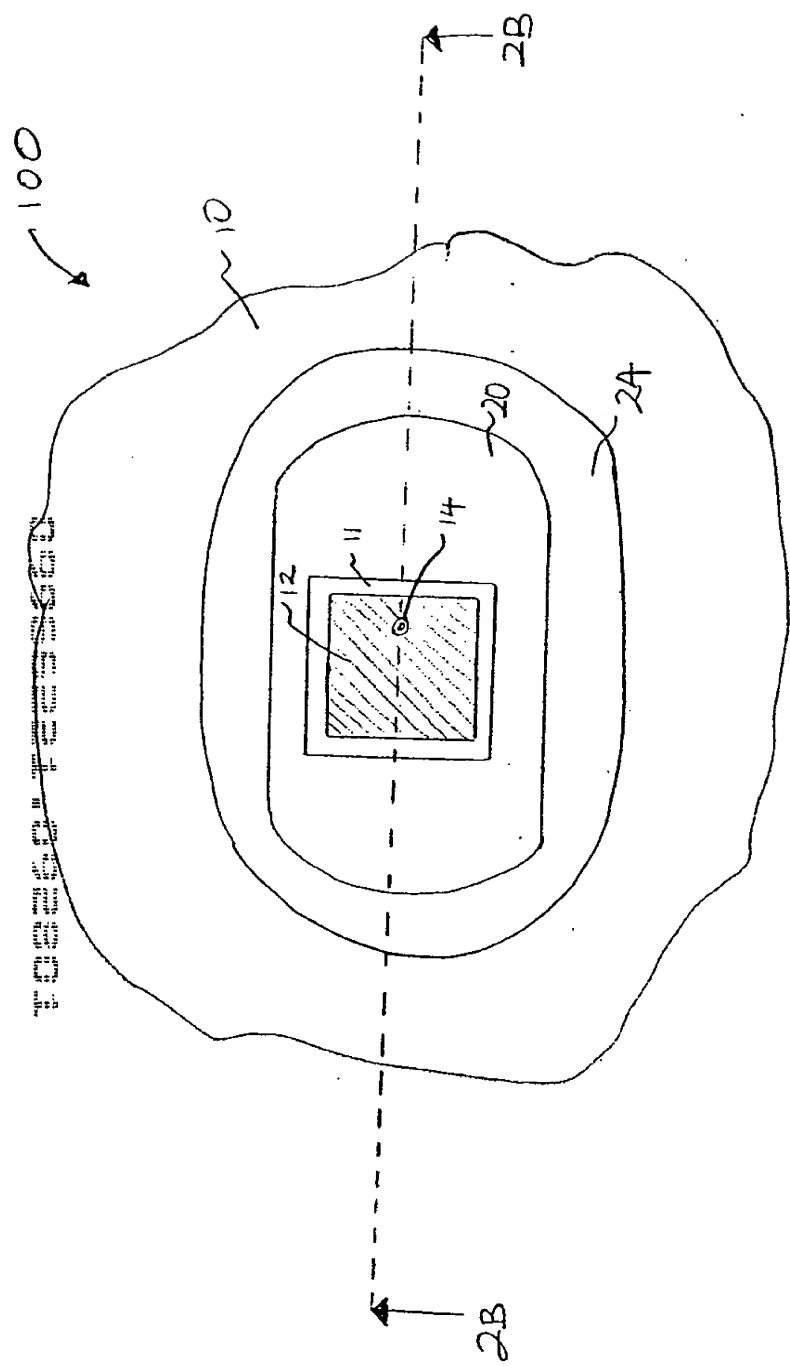


FIG. 2B

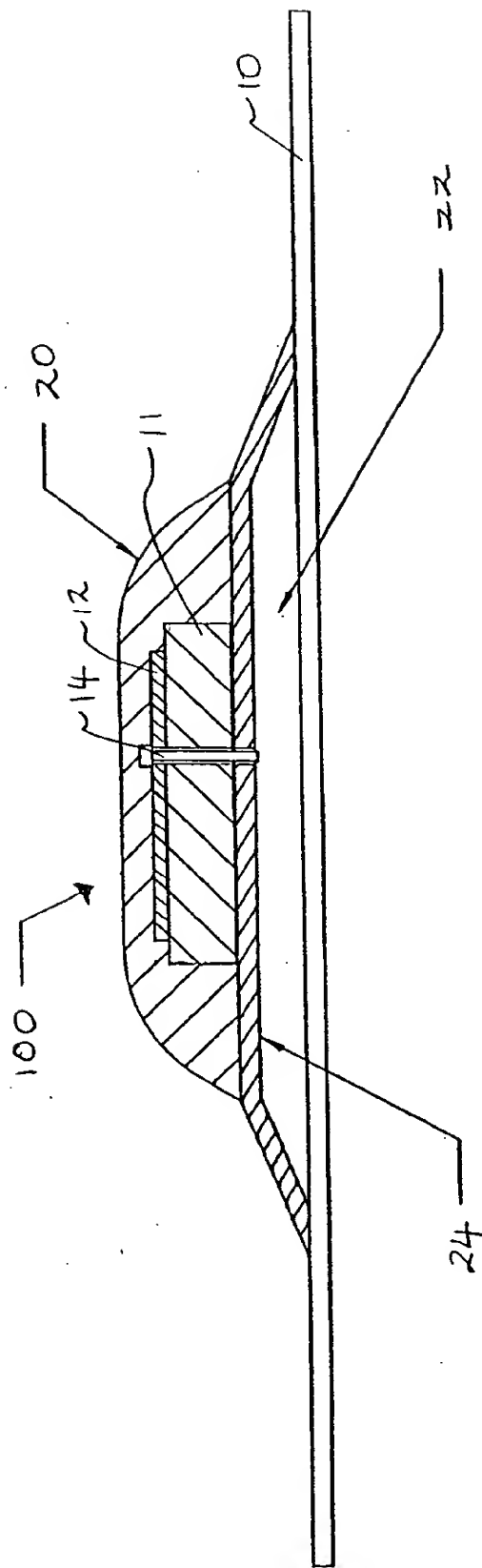
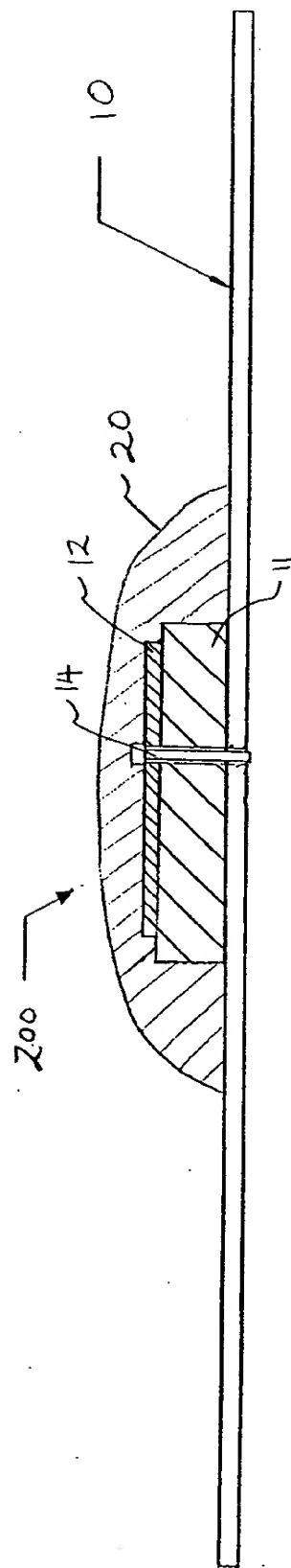


FIG. 3

FIG. 3



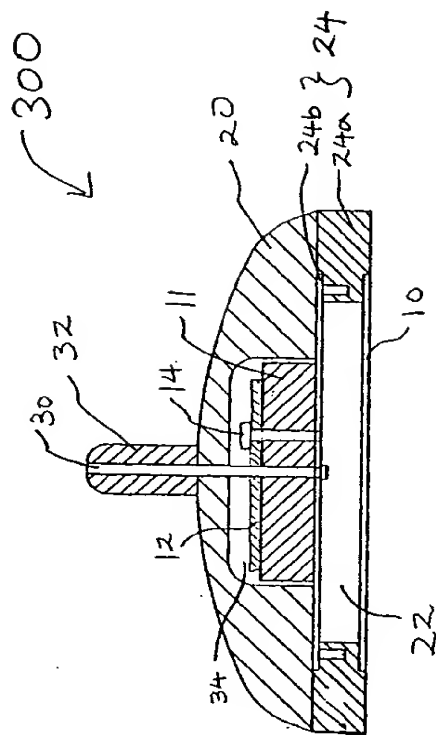
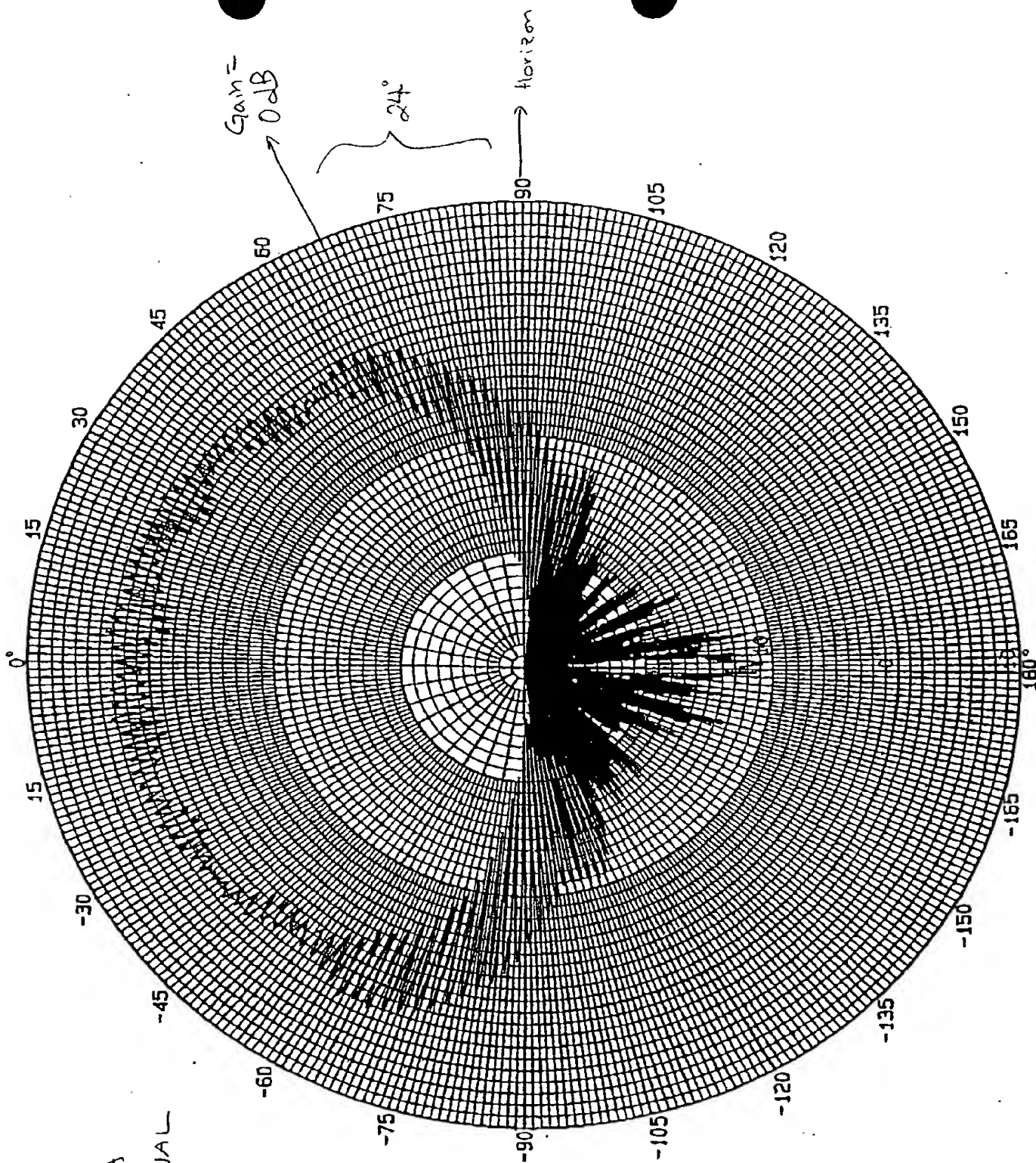


FIG. 4

FORCED ZERO
 Zenith Gain = 3dB
 ↓



GAIN MAGNITUDE DBI VS AZIMUTH ANGLE

Zenith Gain = 3 dB
 0 dB

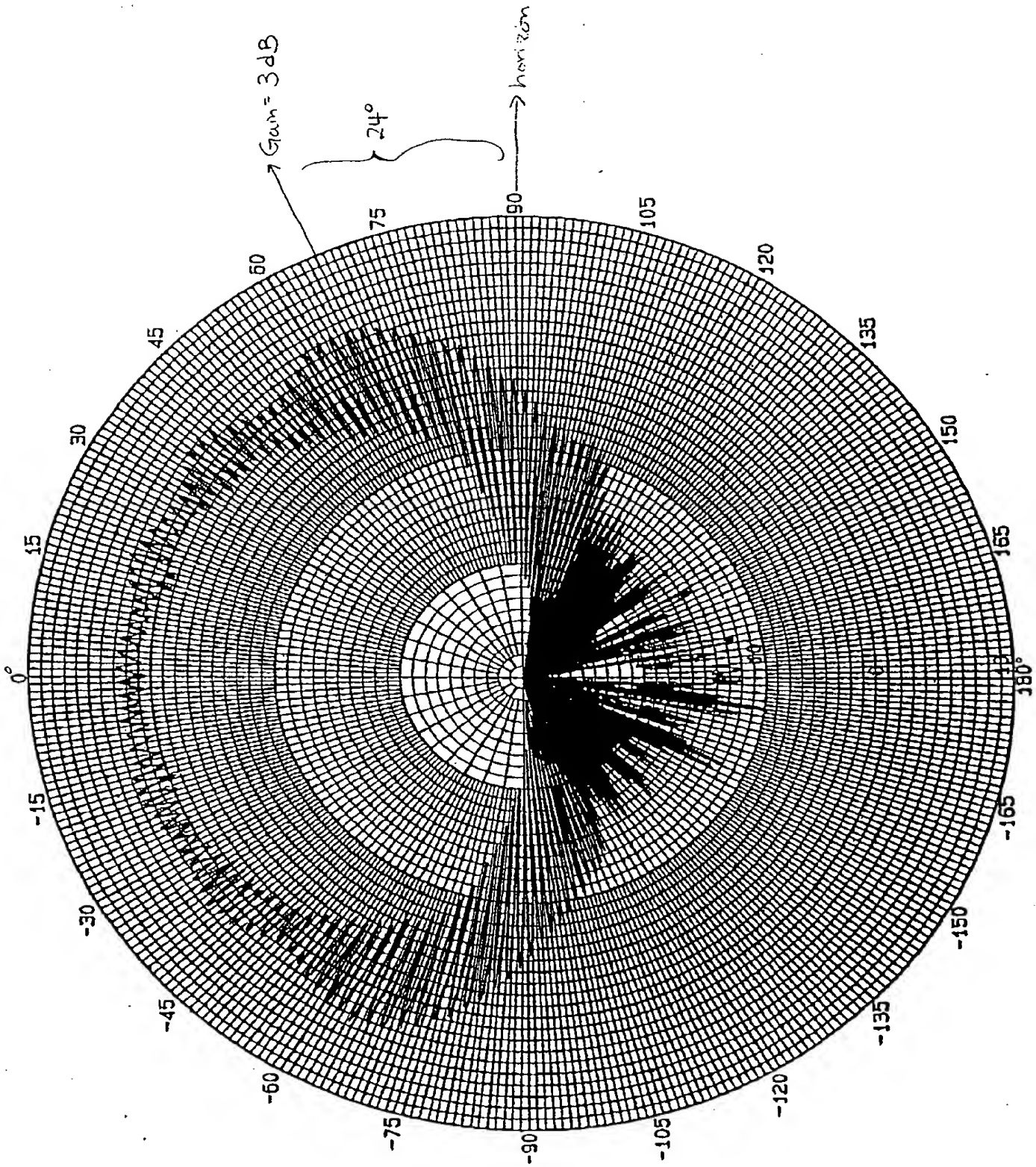
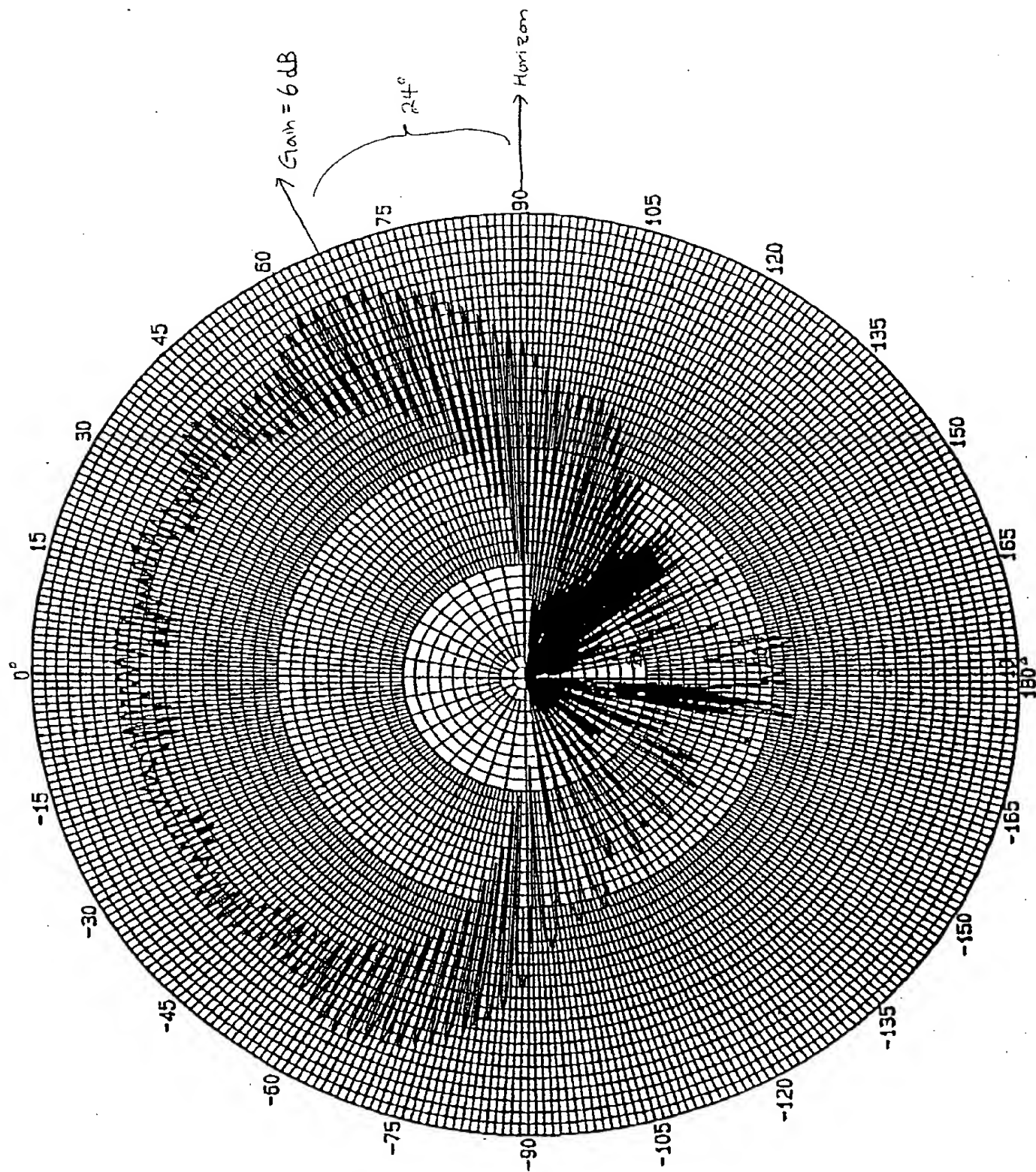


FIG. 5B
 CONVENTIONAL
 ART

GAIN Magnitude dB vs AZIMUTH ANGLE

FIG. 6A



GAIN MAGNITUDE DBI VS AZIMUTH ANGLE

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|--------|-------|-------|-------|------|------|------|-----|-----|-----|----|----|----|----|---|---|---|-----|------|-------|--------|---------|----------|-----------|------------|-------------|--------------|---------------|----------------|-----------------|------------------|-------------------|--------------------|---------------------|----------------------|-----------------------|------------------------|-------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|------------------------------|-------------------------------|--------------------------------|---------------------------------|----------------------------------|-----------------------------------|------------------------------------|-------------------------------------|--------------------------------------|---------------------------------------|--|---|--|---|--|---|--|---|--|---|--|---|--|--|---|--|---|--|---|--|---|--|--|--|--|---|---|--|---|--|---|--|---|---|--|---|--|---|--|---|--|---|--|--|---|--|---|
| 200000 | 100000 | 50000 | 25000 | 12500 | 6250 | 3125 | 1562 | 781 | 390 | 195 | 97 | 48 | 24 | 12 | 6 | 3 | 1 | 0.5 | 0.25 | 0.125 | 0.0625 | 0.03125 | 0.015625 | 0.0078125 | 0.00390625 | 0.001953125 | 0.0009765625 | 0.00048828125 | 0.000244140625 | 0.0001220703125 | 0.00006103515625 | 0.000030517578125 | 0.0000152587890625 | 0.00000762939453125 | 0.000003814697265625 | 0.0000019073486328125 | 0.00000095367431640625 | 0.000000476837158203125 | 0.0000002384185791015625 | 0.00000011920928955078125 | 0.000000059604644775390625 | 0.0000000298023223876953125 | 0.00000001490116119384765625 | 0.000000007450580596923828125 | 0.0000000037252902984619140625 | 0.00000000186264514923095703125 | 0.000000000931322574615478515625 | 0.0000000004656612873077392578125 | 0.00000000023283064365386962890625 | 0.000000000116415321826934814453125 | 0.0000000000582076609134674072265625 | 0.00000000002910383045673370361328125 | 0.000000000014551915228366851806640625 | 0.0000000000072759576141834259033203125 | 0.00000000000363797880709171295166015625 | 0.000000000001818989403545856475830078125 | 0.0000000000009094947017729282379150390625 | 0.00000000000045474735088646411895751953125 | 0.000000000000227373675443232059478759765625 | 0.0000000000001136868377216160297393798828125 | 0.00000000000005684341886080801486968994140625 | 0.000000000000028421709430404007434844970703125 | 0.0000000000000142108547152020037174224853515625 | 0.00000000000000710542735760100185871124267578125 | 0.000000000000003552713678800500929355621337890625 | 0.000000000000001776356839400250046477810668953125 | 0.0000000000000008881784197001250232388903344765625 | 0.00000000000000044408920985006251161944516723828125 | 0.000000000000000222044604925031255597225583619140625 | 0.0000000000000001110223024625156277986127918095703125 | 0.00000000000000005551115123125781389930639590478515625 | 0.000000000000000027755575615628906949653197952392578125 | 0.0000000000000000138777878078144534748265989761962890625 | 0.00000000000000000693889390390722673741329948809814453125 | 0.00000000000000000346944695195361336870664974404907265625 | 0.00000000000000000173472347597680668435332487202453828125 | 0.0000000000000000008673617379884033421776624360122719140625 | 0.00000000000000000043368086899420167108883121800613595703125 | 0.00000000000000000021684043449710083554441560900306798828125 | 0.000000000000000000108420217248550417772207804501533994140625 | 0.0000000000000000000542101086242752088861039022507669970703125 | 0.00000000000000000002710505431213760444305195112538349853515625 | 0.000000000000000000013552527156068802221525975562691749272928125 | 0.0000000000000000000067762635780344011107629877813458746364609375 | 0.00000000000000000000338813178901720055538149389067293731823046875 | 0.00000000000000000000169406589450860027769074694533646865911521875 | 0.000000000000000000000847032947254300138845373472668234329557609375 | 0.0000000000000000000004235164736271500694226867363341171647788046875 | 0.00000000000000000000021175823681357500497134336816705858238940234375 | 0.000000000000000000000105879118406787502485671684083529291194701171875 | 0.0000000000000000000000529395592033937512428358420417646455973505859375 | 0.00000000000000000000002646977960169687562114292102088232279867529296875 | 0.000000000000000000000013234889800848437810571460510441161149833764609375 | 0.00000000000000000000000661744490042421890528573025522055574941688234375 | 0.000000000000000000000003308722450212109452642865127610277874708441171875 | 0.00000000000000000000000165436122510605472632143256380513893723542055859375 | 0.000000000000000000000000827180612553027363160716251902569468617710279296875 | 0.0000000000000000000000004135903062765136815803581259512847343088535491484375 | 0.000000000000000000000000206795153138256840790 |
|--------|--------|-------|-------|-------|------|------|------|-----|-----|-----|----|----|----|----|---|---|---|-----|------|-------|--------|---------|----------|-----------|------------|-------------|--------------|---------------|----------------|-----------------|------------------|-------------------|--------------------|---------------------|----------------------|-----------------------|------------------------|-------------------------|--------------------------|---------------------------|----------------------------|-----------------------------|------------------------------|-------------------------------|--------------------------------|---------------------------------|----------------------------------|-----------------------------------|------------------------------------|-------------------------------------|--------------------------------------|---------------------------------------|--|---|--|---|--|---|--|---|--|---|--|---|--|--|---|--|---|--|---|--|---|--|--|--|--|---|---|--|---|--|---|--|---|---|--|---|--|---|--|---|--|---|--|--|---|--|---|

3

$G_{12} = 5.5 \text{ dB}$

24°

horizon

0 15 30 45 60 75 90 105 120 135 150 165 180

-90 -105 -120 -135 -150 -165 -180

GAIN Magnitude dBi Vs. AZIMUTH ANGLE